LI Sen | LI Sen

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EDUCATION

Southern University of Science and Technology Shenzhen, China
PhD. Intelligent Manufacturing and Robotics Sept. 2022 - Present

- GPA: 3.25/4.0.
- Thesis: Active Soft Polyhedral Networks from Structure Design to Proprioceptive Sensing for In-Finger Manipulation*

Guangdong University of Technology Guangzhou, China
M.E. Control Science and Engineering Sept. 2019 - June 2022

- GPA: 3.96/5.0, top 3.8%.
- Dissertation: Research on the Planning and Control Method of Wall-Flip Maneuver for Humanoid Robot**

Guangdong University of Technology Guangzhou, China
B.E. Electronic Engineering Sept. 2015 – June 2019

- GPA: 3.88/5.0, top 1.6%, Admission into postgraduate exempt from exam.
- Dissertation: Research on Algorithm of Cooperative Work of Dual Six-Axis Manipulator***.

Xbotpark & Guangdong U of Tech Songshan Lake, Dongguan, China
Minor: Joint College of Robotics Sept. 2017 – June 2019

- Guang Dong and Hong Kong Joint College of Robotics

SELECTED PUBLICATIONS

[1] Sen LI, Chengxiao DONG, Chaoyang SONG, and Fang WAN, **"ActiveSPN: Active Soft Polyhedral Networks With Pose Estimation for In-Finger Object Manipulation",** [J]. *IEEE Robotics and Automation Letters,* (DOI: 10.1109/LRA.2025.3583616) [PDF], [Video], (Published).

[2] Zhifeng HUANG, Sen LI, Jungao JIANG, Ying WU, Liang YANG, and Yun ZHANG, **"Biomimetic Flip-and-Flap Strategy of Flying Objects for Perching on Inclined Surfaces",** [J]. *IEEE Robotics and Automation Letters,* (DOI: 10.1109/LRA.2021.3070254) [PDF], [Video], (Published).

[3] Sen LI, Fang WAN, and Chaoyang SONG, **"Multi-Modal Vision-Based Deformable Perception for In-Finger Manipulation with Soft Active Surfaces"** [J]. *Biomimetic Intelligence and Robotics* (Under Review).

[4] Sen LI, Chaoyang SONG, and Fang WAN, **"Active surface with passive Omni-Directional adaptation for In-Hand manipulation",** [C]. *International Conference on Reconfigurable Mechanisms and Robots,* (DOI: 10.1109/ReMAR61031.2024.10619925) [PDF], (Published).

More publications are available on [ORCID] amd [Google Scholar].

RESEARCH PROJECTS

ActiveSPN from Design to Proprioceptive Sensing for In-Finger Manipulation*[Video] Aug. 23 – Present
Supervisor: Assistant Prof. Fan Wan & Chaoyang Song BionicDL, Sustech

- Brief Description: We propose Active Soft Polyhedral Networks (ActiveSPN), a novel adaptive gripper with proprioceptive state estimation and omni-directional in-finger manipulation capability in confined spaces.
- Responsibilities: Design an omni-adaptive structure with an active surface, model its kinematics and dynamics, and develop a generative learning algorithm for pose and force estimation.

Flying Objects Perching on Inclined Surfaces**[Video] May. 20 – Jan. 21
Supervisor: Associate Prof. Zhifeng Huang Jet Power Humanoid Robotics Lab

- Brief Description: A flip-and-flap biomimetic strategy is presented that enables a high-speed flying object to perch on inclined surfaces without speed reduction before touchdown.
- Responsibilities: Analyzed the motions of flying objects by building a mathematical model that simulated the flip-and-flap process; Performed progressed analysis and compiled the paper for publication.

Cooperative work of Dual Six-Axis Manip***[Video] Aug. 18 – June 19
Supervisor: Dr. WANG Hong Xbotpark

- Brief Description: Developed algorithms for the slave manipulator to follow the master manipulator and to perform independent trajectory overlay.
- Responsibilities: Completed the simulation of position and attitude planning algorithms, and design the trajectory tracking and trajectory overlay algorithm.

ROBOCON [Video] Nov. 15 – June 17
Team Member College of Robotics, GDUT

- Brief Description: Built upon the previous badminton robot, designed two robots for ROBOCON "Clean Energy: Powering the World" and "Asobi: The Landing Disc" to further develop engineering skills.
- Responsibilities: Participated in the design of badminton robot, clean energy robots, frisbee robot, and serve as the operator of the badminton robot. Mainly responsible for the control of the chassis of the mecanum wheel and the launcher.

PROFESSIONAL EXPERIENCE

Coordinate Measuring Machine (CMM) Project [Video] June 19 – Aug. 19
Research Assistant Robotics Institute, HKUST

- Brief Description: This project is to realize the precise positioning and processing of the workpiece. Given a template file or coarse position of the workpiece, the CMM could output the precise measurements of the workpiece by sampling point clouds automatically generated on the workpiece's surface.
- Responsibilities: Design algorithms to automatically generate measurement path on the surface of the workpiece by collected a few sampling data. The measurement was performed with errors less than 2 μm.

AWARDS

Contest Awards & Student Awards

- ROBOCON 2017, National Competition South Division, Third Prize 17
- ROBOCON 2016, Excellence Award 16
- Outstanding Graduate Student Award 24
- Ph.D. Scholarship (400,000 CNY) Spet. 22-Jun. 26
- National Scholarship of China 21
- First-class scholarship and Excellent Student (Five times) 16 - 19, 21
- Outstanding Student Leader (Three times) 16 - 18